

## **CLAIMS:**

What is claimed is:

1. An apparatus for flipping a product, said apparatus comprising:

an end roller;

a first conveyor, wherein said first conveyor translates about said end roller,

thereby forming a convex terminal end; and

- 5                   a second conveyor having a curved path, wherein said curved path has an essentially horizontal axis of rotation, and further wherein said curved path defines a concavity;

wherein said convex terminal end of said first conveyor is positioned in a nested arrangement with said concavity, thereby defining a channel for product to pass

- 10                   therethrough and turn over.

2. The flipping apparatus of claim 1 wherein said curved path is C-shaped.

3. The flipping apparatus of claim 1 wherein said curved path has an increasing radius.

4. The flipping apparatus of claim 1 wherein said curved path has a semicircular cross-section.

5. The flipping apparatus of claim 1 wherein said second conveyor comprises a wire-mesh material.

6. The flipping apparatus of claim 1 wherein said second conveyor comprises a plurality of chain links.
7. The flipping apparatus of claim 1 wherein said second conveyor comprises a fabric.
8. The flipping apparatus of claim 1 wherein said second conveyor comprises a polymer material.
9. The flipping apparatus of claim 1 wherein said second conveyor comprises a metallic material.
10. The flipping apparatus of claim 1 wherein:
  - said end roller comprises a grooved roller having at least two larger diameter sections interspersed along the length of the grooved roller by at least one smaller diameter section;
  - 5       said first conveyor is supported by and rotates about said at least one smaller diameter section; and
  - said second conveyor is supported by and rotates about said at least two larger diameter sections, thereby forming said curved path.
11. The flipping apparatus of claim 10 wherein said first conveyor comprises a plurality of endless belts.

12. The flipping apparatus of claim 10 wherein said first conveyor comprises a plurality of endless cords.
13. The flipping apparatus of claim 1 wherein the first conveyor and the second conveyor have substantially similar velocities.
14. The flipping apparatus of claim 1 wherein the curved path of said second conveyor creates a centrifugal force that is sufficient for the product to remain in contact with the second conveyor but is less than a minimum amount of force required to break the product.

15. An apparatus for flipping a product, said apparatus comprising:

a first conveyor having a terminal end; and

a second conveyor having a curving surface portion on one side axial to said terminal end of said first conveyor;

5 wherein said first conveyor and said second conveyor are positioned so that the terminal end of said first conveyor and the curving surface portion of said second conveyor define at least one channel for product to pass therethrough and turn over.

16. The flipping apparatus of claim 15 wherein said curving surface portion is C-shaped.

17. The flipping apparatus of claim 15 wherein said curving surface portion has an increasing radius.

18. The flipping apparatus of claim 15 wherein said curving surface portion has a semicircular cross-section.

19. The flipping apparatus of claim 15 wherein said second conveyor comprises a wire-mesh material.

20. The flipping apparatus of claim 15 wherein said second conveyor comprises a plurality of chain links.

21. The flipping apparatus of claim 15 wherein said second conveyor comprises a fabric.
22. The flipping apparatus of claim 15 wherein said second conveyor comprises a polymer material.
23. The flipping apparatus of claim 15 wherein said second conveyor comprises a metallic material.
24. The flipping apparatus of claim 15 further comprising a grooved roller having at least two larger diameter sections interspersed along the length of the grooved roller by at least one smaller diameter section, wherein said first conveyor is supported by and rotates about said at least one smaller diameter section, and further wherein said second conveyor is supported by and rotates about said at least two larger diameter sections, thereby defining said at least one channel.
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25. The flipping apparatus of claim 24 wherein said first conveyor further comprises a plurality of endless belts.
26. The flipping apparatus of claim 24 wherein said first conveyor further comprises a plurality of cords.

27. The flipping apparatus of claim 15 wherein the first conveyor and the second conveyor have substantially similar velocities.
28. The flipping apparatus of claim 15 wherein the curving surface portion of said second conveyor creates a centrifugal force that is sufficient for the product to remain in contact with the second conveyor but is less than a minimum amount of force required to break the product.

29. A method for flipping a product using an apparatus comprising a first conveyor having a terminal end and a second conveyor having a curving surface portion on one side axial to the terminal end of said first conveyor, said method comprising the steps of:

a) conveying the product upon said first conveyor towards the terminal end of said first conveyor;

b) receiving the product along the curving surface portion of said second conveyor;

c) conveying the product along the curving surface portion of said second conveyor and through a channel defined by the terminal end of said first conveyor and the curving surface portion of said second conveyor, thereby flipping the product.